

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. – 29. (Cancelled)

30. (Currently Amended) A film forming apparatus, comprising:
a reaction vessel evacuated by an evacuation system, said reaction vessel being adapted to hold therein a substrate to be processed;

a source bottle holding therein a source material of a film to be formed on said substrate, said source bottle forming a source gas therein as a result of vaporizing caused by a vaporizing gas;

a vaporizing gas line supplying said vaporizing gas to said source bottle;
a source gas line supplying said source gas to said reaction vessel;
a diluting gas line connected to said source gas line at a node located between said source bottle and said reaction vessel for diluting said source gas in said source gas line with a diluting gas supplied through said diluting gas line;
a gas analyzer analyzing a concentration of said source gas flowing through said gas analyzer source gas line in a part thereof located between said source bottle and said reaction vessel;

a first mass flow controller provided in said vaporizing gas line, said first mass flow controller controlling a flow rate of said vaporizing gas flowing through said vaporizing gas line;

a second mass flow controller provided in said diluting gas line, said second mass flow controller controlling a flow rate of said diluting gas flowing through said diluting gas line; and

a controller provided with an output from said gas analyzer and controlling, in response thereto, said first mass flow controller and said second mass flow controller, such that a difference between said concentration of said source gas and a target concentration of said source gas is decreased.

a bypass line connected to said source gas line at a node.

wherein said gas analyzer is provided in a path of said source gas flowing from said source bottle to said node, such that said source gas flowing from said source bottle to said node flows through said gas analyzer.

31. (Previously Presented) The film forming apparatus as claimed in claim 30, wherein said source bottle holds said source material in the form of solid phase or liquid phase.

32. (Previously Presented) The film forming apparatus as claimed in claim 30, wherein said vaporizing gas comprises an inert gas and said diluting gas comprises an inert gas.

33. (Previously Presented) The film forming apparatus as claimed in claim 30, wherein said source gas flows through said source gas line together with said vaporizing gas as a carrier gas, said controller controlling said second mass flow controller, when controlling said first mass flow controller, such that a total flow rate in said source gas line is maintained constant.

34. (Cancelled)

35. (Cancelled)

36. (Previously Presented) The film forming apparatus as claimed in claim 30, wherein said gas analyzer is provided in line to said source gas line, such that said source gas is supplied to said reaction vessel through said gas analyzer.

37. (Previously Presented) The film forming apparatus as claimed in claim 30, wherein said gas analyzer is provided parallel to said part of said source gas line located between said node and said reaction vessel, an upstream end of said gas analyzer being connected to a corresponding upstream side of

said part via a valve and a down stream end of said gas analyzer being connected to a corresponding downstream side of said part via a valve.

38. (Currently Amended) The film forming apparatus as claimed in claim 30, wherein said further comprising a bypass gas line is connected to said source gas line via a switching valve, said bypass gas line being connected to said evacuation system and bypassing said reaction vessel.

39. (Cancelled)

40. (Previously Presented) The film forming apparatus as claimed in claim 30, wherein said source material has a vapor pressure of 266Pa or less at a work temperature thereof.

41. (Previously Presented) The film forming apparatus as claimed in claim 30, wherein said source gas comprises W(CO)₆.

42. (Previously Presented) The film forming apparatus as claimed in claim 30, wherein said gas analyzer comprises a Fourier transform infrared spectrometer.

43. (Previously Presented) The film forming apparatus as claimed in claim 30, further comprising: a manometer that measures a pressure inside said source gas line; and a processor correcting a concentration of said source gas analyzed by said gas analyzer based on said pressure.

44. (Previously Presented) The film forming apparatus as claimed in claim 43, wherein said processor calculates an absolute concentration of said source gas.

45. (Previously Presented) The film-formation apparatus as claimed in claim 43, wherein said processor multiplies a correction term, which includes said pressure at a denominator, to an output of said gas analyzer.

46. (Previously Presented) The film-formation apparatus as claimed in claim 43, wherein said manometer is provided at any of an upstream side and a downstream side of said gas analyzer.

47. (Previously Presented) The film-formation apparatus as claimed in claim 30, wherein said gas analyzer measures said concentration of said source gas in said source gas line at a downstream side said node.

48. (Previously Presented) The film-formation apparatus as claimed in claim 30, wherein said gas analyzer measures said concentration of said source gas in said source gas line at an upstream side of said node.

49. (Previously Presented) The film-formation apparatus as claimed in claim 30, wherein said gas analyzer injects an infrared light to said source gas and produces an output signal based upon an infrared absorption spectrum of said infrared light passed through said source gas.

50. (Previously Presented) The film-formation apparatus as claimed in claim 30, wherein said gas analyzer comprises a non-dispersion infrared spectrometer.

51. (Currently Amended) A source supply system of a film forming apparatus, said film forming apparatus comprising a reaction vessel evacuated by an evacuation system, said source supply system comprising:

a source bottle holding therein a source material, said source bottle forming a source gas therein as a result of vaporizing caused by a vaporizing gas;
a vaporizing gas line supplying said vaporizing gas to said source bottle;
a source gas line supplying said source gas to said reaction vessel;
a diluting gas line connected to said source gas line at a node located between said source bottle and said reaction vessel for diluting said source gas in said source gas line with a diluting gas supplied through said diluting gas line;

a gas analyzer analyzing a concentration of said source gas flowing through said gas analyzer source gas line in a part thereof located between said source bottle and said reaction vessel:

a first mass flow controller provided in said vaporizing gas line, said first mass flow controller controlling a flow rate of said vaporizing gas flowing through said vaporizing gas line;

a second mass flow controller provided in said diluting gas line, said second mass flow controller controlling a flow rate of said diluting gas flowing through said diluting gas line; and

a controller provided with an output from said gas analyzer and controlling, in response thereto, said first mass flow controller and said second mass flow controller, such that a difference between said concentration of said source gas and a target concentration of said source gas is decreased,

a bypass line being connected to said source gas line at a node,

wherein said gas analyzer is provided in a path of said source gas flowing from said source bottle to said node, such that said source gas flowing from said source bottle to said node flows through said gas analyzer.

52. (Previously Presented) A source supply system as claimed in claim 51, wherein said gas analyzer is provided in a branched gas line branched from said source gas line at a downstream side of said part located between said source bottle and said reaction vessel.